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Bronchiectasis complicating rheumatoid arthritis

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Introduction

Rheumatoid arthritis (RA) is often complicated by lung lesions. Lung lesions observed with RA include pleurisy, nodular lesions, interstitial pneumonia, pulmonary fibrosis, pulmonary angitis, pulmonary hypertension and bronchiolitis obliterans (1). In recent years, bronchiectasis (BR) has also been suggested to be associated with RA (2,3). However, there are no detailed case reports of RA complicated by BR. We performed pneumonectomy in a patient with BR accompanied by RA.

Case Report

A 68-year-old female had no smoking history. In 1986, she noticed multiple symmetrical pain, swelling and stiffness in the morning in the metacarpal finger joints, proximal finger joints, distal finger joints, elbow and ankle of the bilateral limbs and was diagnosed as having RA. She was treated with a non-steroidal antiphlogistic. In 1991, sputum appeared, and antibiotics were occasionally administered at the medical department of our hospital. Chest X-ray examination showed no abnormalities when evaluated retrospectively. On 18 January 1993, she was admitted due to aggravation of dyspnoea, purulent sputum and fever. Chest X-ray examination on admission showed destruction of the left lung and atrophy in the entire left lung (Plate 1). Bronchoscopy showed retention of purulent sputum in the left main bronchus. After administration of multiple antibiotics, the fever and the amount of sputum decreased. However, about 6 weeks after the initiation of antibiotic administration, methicillin-resistant *Staphylococcus aureus* (MRSA) was detected in sputum. A fever and marked purulent sputum appeared again. She was referred to our department for resection of the destroyed left lung to eliminate the infectious focus.

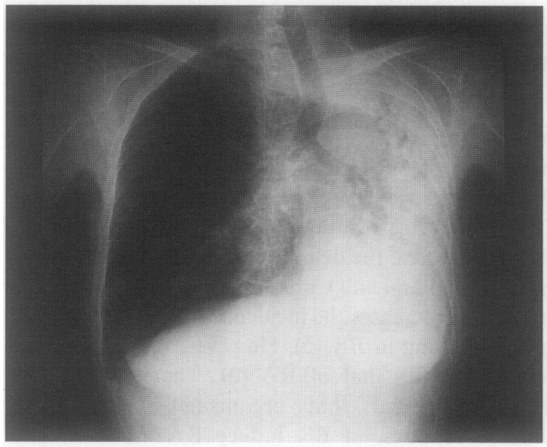

Plate 1 Chest X-ray film at the time of reference to our department. The entire left lung showed destruction and atrophy. Left deviation of the trachea was observed.

Blood examination showed slight anaemia (Hb 8·1 g dl^{-1}), an increase in WBC count (10 100 mm^{-1}), and an increase in blood sedimention rate (100 mm h^{-1}). Serological examination showed a polyclonal increase in β-globulin (32·8%) and an increase in C-reactive protein (19·2 mg dl^{-1}). As rheumatoid factor, the RA test (+), and the RA haemagglutination was strongly positive (1:20,480). Pulmonary function tests showed decreased function (VC, 0·98 1; %VC, 44·34%; FEV_1, 53·6%). The patient fulfilled the following six criteria proposed by the American Rheumatism Association: stiffness in the morning, arthritis in three or more areas, arthritis of the hand, symmetrical arthritis, positive serum rheumatoid factor and roentgenographic changes in finger joints (bone atrophy near the finger joints). Rheumatoid arthritis accompanied by lung destruction was complicated by infection. We considered that the infection focus in the destroyed lung was difficult to treat by drug administration. After pre-operative i.v. administration of vancomycim, for

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which MRSA had no tolerance, for 1 week, pneumonectomy was performed on the left lung on 13 April 1993. The entire lung was atrophied. The bronchial mucosa was oedematous and thickened, but the bronchial cavity on its peripheral side was dilated, showing BR. Azan staining showed disappearance of the original bronchial wall structure, its replacement by fibrous tissue and destruction of the remaining bronchial cartilage. Bronchiectasis was pathologically confirmed and she was discharged 3 weeks post-operation.

Discussion

The association between RA and BR has not been reported until recently. Walker reported that the incidence of BR in RA patients is about 10 times higher than that in patients with osteoarthritis (4). Though the association between RA and BR has been suggested, the definite cause of the complication is unclear. Banji and Cooke speculated that RA or its treatment increases the incidence of respiratory infection, resulting in BR (5). However, the onset of BR often precedes that of RA (3). Therefore, another study suggested that organisms in chronically infected sputum in BR induce RA. On the other hand, class II MHC antigen common to RA and BR is suggested to be involved (6). In our patient, RA clinically preceded BR, and respiratory infection repeatedly occurred from about 5 yr after the onset of RA. Chest X-ray examination during this period showed no abnormalities. However, severe infection complicated BR, leading to lung destruction after only 2 yr. The patient had neither a smoking history, a history of sinusitis nor respiratory infection in childhood. In this patient, RA seems to be involved in the development of BR. It should be recognized that BR is included in pulmonary diseases that complicate RA.

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